



The Luxembourg BabelNet Workshop

3 March 2016: Session 7

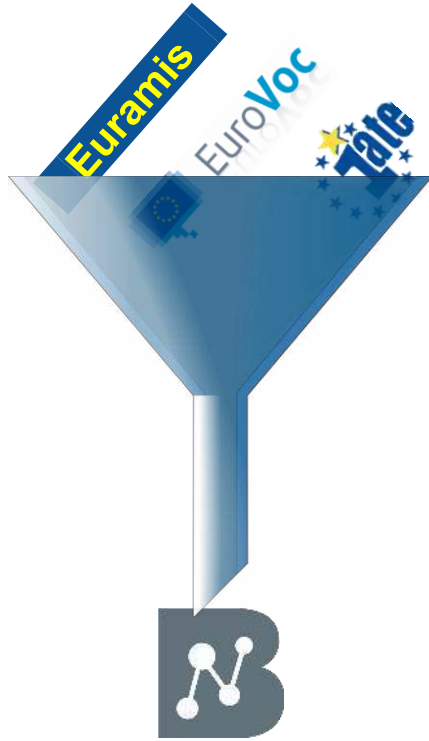
Linking IATE, EUROVOC and Euramis

Roberto Navigli

Session 7 – The Luxembourg BabelNet Workshop [13:15-14:45, 3 March, 2016]

- We will see **different strategies** to link three different resources to BabelNet (and, as a result, to each other):
 - IATE
 - EUROVOC
 - Euramis
- More resources can be linked with similar strategies, so it is just up to you to decide what to work on!
- You could **add these resources to the LLOD!**

We have a dream!






IATE

- **IATE** (Inter-Active Terminology for Europe) is the EU's inter-institutional terminology database.
- Administered by the **EU Translation Centre**
- Legacy databases imported into IATE:
 - Eurodicautom
 - TIS
 - Euterpe
 - Euroterms
 - CDCTERM
- Since 2002 it has been enriched by all EU translators
- A public version contains 8.5M validated terms from EU legislation in 110 domains in 24 languages



IATE

 InterActive Terminology
for Europe

English (en) ▾

[Search Screen](#) [Help](#)

en > Any (domain: Any domain, type of search: All)

Result 1- 1 of 1 for **marketization**

FINANCE [COM]		Full entry
EN	marketization	★★★★+@
DA	marketisation	★★★★+@
DE	Marktbildung in standardisierter Form	★★★★+@
EL	εμπορευματοποίηση	★★★★+@
ES	mercaderización	★★★★+@
FI	markkinavetoisuus	★★★★+@
	markkinalähtöisyys	★★★★+@
FR	marchéisation	★★★★+@
IT	marketization	★★★★+@
NL	marktgericht zijn	★★★★+@
SV	marknadsorientering	★★★★+@

1

en > Any



Linking IATE to BabelNet

Goal: To automatically (and semantically) link IATE to BabelNet using a **language- and resource-agnostic approach**



BabelNet



Linking IATE to BabelNet

Consider the entries for the Italian Republic in IATE and in BabelNet

InterActive Terminology for Europe

English (en)

Search Screen Help

Italian republic Search

en > Any (domain: Any domain, type of search: All)

Result 1- 10 of 26 for Italian republic

GEOGRAPHY, Europe [Council]		Full entry
EN	Italy	★★★★★ 20
	Italian Republic	★★★★★ 20
I		★★★★★ 20
IT		★★★★★ 20
MUL	EUR	★★★★★ 20
	ITA	★★★★★ 20
BG	Италия	★★★★★ 20
	Италианска република	★★★★★ 20
CS	Itálie	★★★★★ 20
	Italská republika	★★★★★ 20
DA	Italien	★★★★★ 20
	Den Italienske Republik	★★★★★ 20
DE	Italien	★★★★★ 20
	die Italienische Republik	★★★★★ 20
EL	Ιταλία	★★★★★ 20
	Ιταλική Δημοκρατία	★★★★★ 20
IT		★★★★★ 20



BabelNet

- Dictionary
- Images
- Translations
- Sources
- Categories
- Compounds
- Other forms
- External Links

RELATED:
History of Italy

LOG IN REGISTER

Italian Republic ENGLISH TRANSLATE INTO SEARCH

PREFERENCES

English Arabic Chinese French German Greek Hebrew Hindi all preferred languages

bn:00047705n · NOUN · Named Entity · Categories: Italy, Countries in Europe, G8 nations, G20 nations...

EN Italy · **Italian Republic** · **Italia** · **Republic of Italy** · **Administrative divisions of Italy**

A republic in southern Europe on the Italian Peninsula; was the core of the Roman Republic and the Roman Empire between the 4th century BC and the 5th century AD

Less definitions

Italy, officially the Italian Republic, is a unitary parliamentary republic in Southern Europe.

Referring to the President, President of the Senate, President of the Chamber of Deputies and the Prime Minister.

Republic in Southern Europe

A country in Southern Europe with capital Rome.



Linking IATE to BabelNet

IATE-134173
(Italian Republic)



bn:00047706
(Italy)



BabelNet



Downloading IATE

IATE's dump is available for download at:

<http://iate.europa.eu/tbxPageDownload.do>

The dump contains: **lemmas, translations, domains**

```
<termEntry id="IATE-3567323">
  <descripGrp>
    <descrip type="subjectField">1016, 16, 2411004</descrip>
  </descripGrp>
  <langSet xml:lang="en">
    <tig>
      <term>national competitiveness board</term>
      <termNote type="termType">fullForm</termNote>
      <descrip type="reliabilityCode">2</descrip>
    </tig>
  </langSet>
```

```
<langSet xml:lang="it">
  <tig>
    <term>comitato nazionale per la competitività</term>
    <termNote type="termType">fullForm</termNote>
    <descrip type="reliabilityCode">3</descrip>
  </tig>
</langSet>
```

```
<langSet xml:lang="fr">
  <tig>
    <term>conseil national de la compétitivité</term>
    <termNote type="termType">fullForm</termNote>
    <descrip type="reliabilityCode">3</descrip>
  </tig>
</langSet>
</termEntry>
```



Downloading IATE

The dump is missing some important information.
Here is a query on the IATE website (<http://iate.europa.eu>) for the English term "**national competitiveness board**"

not in the
dump

in the
dump

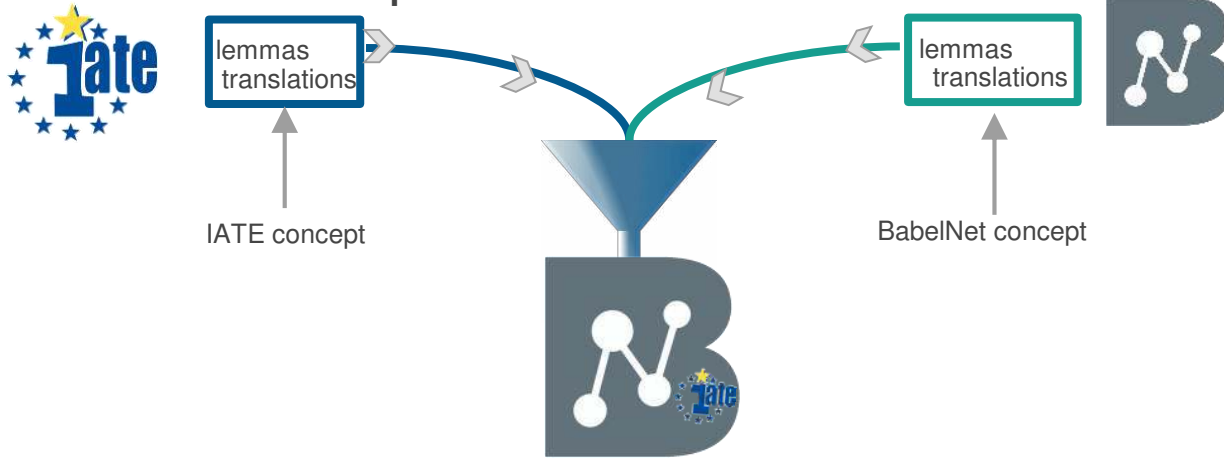
Dominio	Costruzione europea, VITA ECONOMICA, Dominio sconosciuto
en	
Definizione	board in the euro area Member State set up to monitor performance and policies in the field of competitiveness, thereby contributing to foster sustained economic convergence, and to increase ownership of the necessary reforms at the national level
<i>Rif. della definizione</i>	Recommendation for a Council recommendation on the establishment of National Competitiveness Boards within the Euro Area, COM/2015/0601 final, 52015DC0601:en:NOT " >52015DC0601/en COM-Internal document: SG/2015/80295/03/00, Council Recommendation on the establishment of National Competitiveness Boards within the Euro Area [21.10.2015]
Termine	national competitiveness board
<i>Affidabilità</i>	2 (Affidabilità minima)
<i>Riferimento relativo ad un termine</i>	Recommendation for a Council recommendation on the establishment of National Competitiveness Boards within the Euro Area, COM/2015/0601 final, 52015DC0601:en:NOT " >52015DC0601/en COM-Internal document: SG/2015/80295/03/00, Council Recommendation on the establishment of National Competitiveness Boards within the Euro Area [21.10.2015]
<i>Contesto</i>	'The setting up of national competitiveness boards in charge of tracking performance and policies in the field of competitiveness should contribute to the enhancement of ownership of the necessary policies and reforms at national levels and to improving the knowledge basis for Union economic policy coordination in the field of competitiveness.'
<i>Rif. del contesto</i>	Recommendation for a Council recommendation on the establishment of National Competitiveness Boards within the Euro Area, COM/2015/0601 final, recital 3, 52015DC0601:en:NOT " >52015DC0601/en
Data	11/12/2015



How to link IATE to BabelNet? (simple mapping)

By solely relying on domains, terms and translations, a first IATE-to-BabelNet mapping approach can be carried out in three steps:

1. Retrieve all **concepts** having the same English lemma in both resources (warning: an ambiguous lemma can cover different concepts);
2. **Compare** each retrieved IATE concept against each BabelNet concept for the lemma;
3. Given a IATE concept, create a mapping to the BabelNet concept that **maximizes the overlap** of lemmas and translations.





How to link IATE to BabelNet? (simple mapping)



id="IATE-134173"

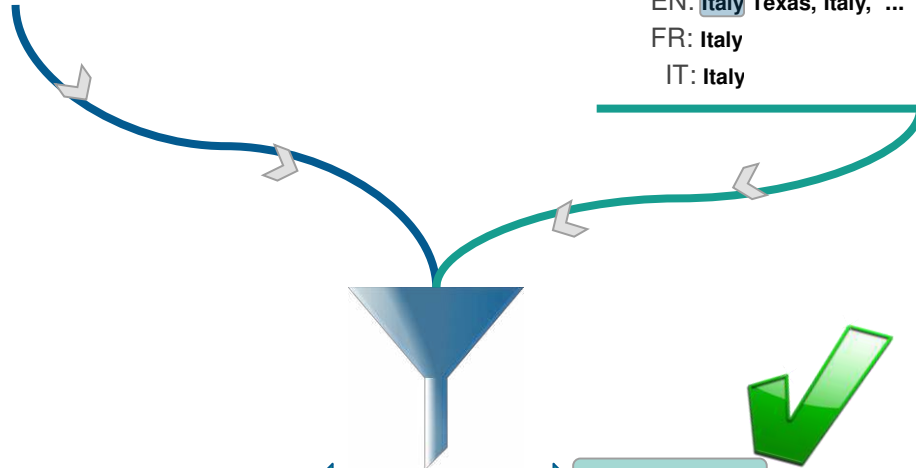
EN: **Italy**, **Italian Republic**
FR: **l'Italie**, **République italienne**
IT: **Italia**, **Repubblica italiana**

id="bn:00047705n"

EN: **Italy**, **Italian Republic**, **Republic of Italy** ...
FR: **Italie**, **République italienne**, **État italien** ...
IT: **Italia**, **Repubblica italiana**, **Repubblica d'Italia**

id="bn:00047705n"

EN: **Italy** **Texas**, **Italy**, ...
FR: **Italy**
IT: **Italy**



IATE-134173

bn:00047705n





How to link IATE to BabelNet? (simple mapping)



id="IATE-1891456"

EN: **Rome**

FR: **Rome**

IT: **Roma**

id="bn:01341486n"

EN: **Rome**

FR: **Rome**

IT: **Roma**

id="bn:00015556n"

EN: **Rome**

FR: **Rome**

IT: **Roma**



No glosses





How to link IATE to BabelNet? (strong mapping)

We can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**



Babelfy





How to link IATE to BabelNet? (strong mapping)

We can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**



IATE-126540
(European Parliament)

parlamento europeo

Search

it > bg cs da de el en es et fi fr ga hr hu it la lt lv mt nl pl pt ro sk sl sv (domain: Any domain, type of search: All)

Result 1- 10 of 172 for **parlamento europeo**

EU institution, Parliament [EP]

[Full entry](#)

IT	PE Parlamento europeo	★★★★ @	
BG	ЕП Европейски парламент	★★★★ @	
CS	Evropský parlament EP	★★★★ @	
DA	Europa-Parlamentet EP	★★★★ @	
DE	EP Europäisches Parlament	★★★★ @	
EL	Ευρωπαϊκό Κοινοβούλιο EK	★★★★ @	
EN	EP European Parliament	★★★★ @	
ES	PE Parlamento Europeo	★★★★ @	
ET	Euroopa Parlament EP	★★★★ @	
FI	Euroopan parlamentti EP	★★★★ @	

No glosses
No Fear!





How to link IATE to BabelNet? (strong mapping)



Collect all the translations and synonyms and generate a multilingual input text for **Babelfy**:



LOG IN REGISTER

Европейски парламент, Evropský parlament, Europa-Parlamentet, Europäisches Parlament, Ευρωπαϊκό Κοινοβούλιο, EK, EP, European Parliament, PE, Parlamento Europeo, Euroopa Parlament, EP, Euroopan parlamentti, EP, PE, Parlement européen, PE, Parlaimint na hEorpa, EP, Evropski parlament, EP, Európai Parlament, Parlamentum Europæ, Parlamentum Europæum, Europos Parlamentas, EP, Eiropas Parlaments, EP, PE, Parlament Ewropew, EP, Europees Parlement, PE, Parlament Europejski, PE, Parlamento Europeu, PE, Parlamentul European, Európský parlament, EP, EP, Evropski parlament, Europaparlamentet.

Enable partial matches:

AGNOSTIC

BABELFY!

“language agnostic” setting



Babelfy

Enable partial matches:

AGNOSTIC

BABELFY!

Европейски парламент, Evropský parlament, Europa-Parlamentet, Europäisches Parlament, Ευρωπαϊκό Κοινοβούλιο, EK, EP, European Parliament, PE, Parlamento Europeo, Euroopa Parlament, EP, Euroopan parlamentti, EP, PE, Parlement européen, PE, Parlamenti na hEorpa, EP, Europski parlament, EP, Európai Parlament, Parlamentum Europæ, Parlamentum Europæum, Europos Parliamentas, EP, Eiropas Parlaments, EP, PE, Parlament Ewropew, EP, Europees Parlement, PE, Parlament Europeiski, PE, Parlamento Europeu, PE, Parlamentul European, Európsky parlament, EP, EP, Evropski parlament, Europaparlamentet,

expanded view | compact view

Европейски парламент, Evropský parlament, Europa-Parlamentet, Europäisches Parlament, Ευρωπαϊκό Κοινοβούλιο, EK, EP, European

Европейски парламент

The European Parliament is the directly elected parliamentary...

Европейски

Of or pertaining to or typical of Europe



парламент

Evropský parlament

The European Parliament is the directly elected parliamentary...

Europa-Parlamentet

The European Parliament is the directly elected parliamentary...

Europäisches Parlament

The European Parliament is the directly elected parliamentary...

Ευρωπαϊκό Κοινοβούλιο

The European Parliament is the directly elected parliamentary...



Κοινοβούλιο

A legislative assembly in certain countries

European

Of or relating to or characteristic of Europe or the people of Europe

predominant synset (bn:03855948n)

synsets minoritari

Legend: Name



How to link IATE to BabelNet? (strong mapping)

IATE-126540
(European Parliament)

bn:03855948n
(European parliament)



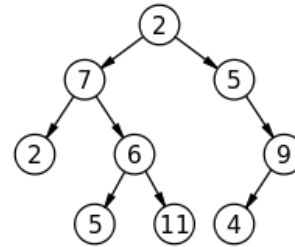
BabelNet



How to link IATE to BabelNet? (strong mapping)



Another example: the term **tree**





How to link IATE to BabelNet? (strong mapping)

tree Search

en > en es fr it nl pl pt ro sk (domain: Any domain, type of search: All)

Result 1- 10 of 1003 for tree



ENVIRONMENT [CdT]

[Full entry](#)

EN tree

★★★★ →@



ES arboles

★★★★ →@

FR arbre

★★★★ →@

IT albero

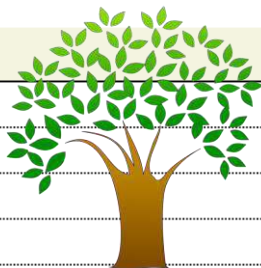
★★★★ →@

NL boom

★★★★ →@

PT árvore

★★★★ →@



Electronics and electrical engineering [COM]

[Full entry](#)

EN tree

★★★★ →@



ES árbol

★★★★ →@

FR arbre

★★★★ →@



IT albero

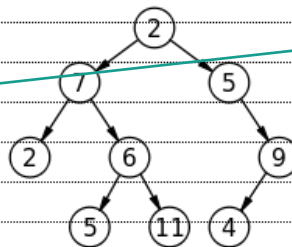
★★★★ →@

NL boom

★★★★ →@

PT árvore

★★★★ →@



If the lemma is the same, we can still use definitions



How to link IATE to BabelNet? (strong mapping)

tree

en > en es fr it nl pl pt ro sk (domain: Any domain, type of search: All)

Result 1- 10 of 1003 for tree



ENVIRONMENT [CdT]

[Full entry](#)

EN tree

★★★★+@



ES arboles

★★★★+@

FR arbre

★★★★+@

IT albero

★★★★+@

NL boom

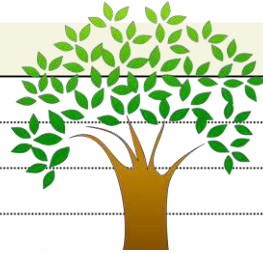
Domain

ENVIRONMENT

en

PT árvore

PT árvores



Definition

1.Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.

Definition Ref.

1.CED;

Term

tree

Reliability

3 (Reliable)

Term Ref.

Institution: EEA; Title: GEMET - GEneral Multilingual Environmental Thesaurus; Publication Year: 1999; Publication Month: August; Volume No: 5;

Date

23/03/1999



tree Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.

Enable partial matches:

ENGLISH

BABELFY!

en > en es fr it nl pl pt ro sk (domain: Any domain, type of search: All)

Result 1- 10 of 1003 for tree

★
★
★
ENVIRONMENT [CdT]

[Full entry](#)

EN tree

★★★★+@



ES arboles

★★★★+@

FR arbre

★★★★+@

IT albero

★★★★+@

NL boom

Domain

ENVIRONMENT

PT árvore

PT árvores

en

Definition

1.Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.

Definition Ref.

1.CED;

Term

tree

Reliability

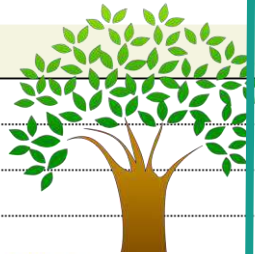
3 (Reliable)

Term Ref.

Institution: EEA; Title: GEMET - GEneral Multilingual Environmental Thesaurus; Publication Year: 1999; Publication Month: August; Volume No: 5;

Date

23/03/1999





Babelify

LOG IN REGISTER

tree Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.

Enable partial matches:

ENGLISH

BABELFY!

expanded view | compact view

tree

Any large

woody

perennial plant with a

distinct

trunk

giving

rise

to

branches

c



tree

A tall perennial woody plant having a main trunk and branches forming a distinct...

woody

Arthur Woody was born in Suches, Georgia.



perennial plant

(botany) a plant lasting for three seasons or more

perennial

Lasting three seasons or more



plant

(botany) a living organism lacking the

distinct

Constituting a separate entity or part



trunk

The main stem of a tree; usually covered with bark; the bole is usually the part that...



rise

A mountain range in the eastern United States extending from Quebec to the Gulf ...



branches

A division of a stem, or secondary stem arising from the main stem of a plant

Legen



Babelify

LOG IN REGISTER

tree Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.

Enable partial matches:

ENGLISH

BABELFY!

expanded view | compact view

tree



tree

A tall perennial woody plant having a main trunk and branches forming a distinct...

Any large

woody

woody

Arthur Woody was born in Suches, Georgia

perennial plant



perennial plant

(botany) a plant lasting for three seasons or more

perennial

Lasting three seasons or more



plant

(botany) a living organism lacking the...

with a

distinct

distinct

Constituting a separate entity or part

trunk



trunk

The main stem of a tree; usually covered with bark; the bole is usually the part that...

giving

rise



rise

A mountain range in the eastern United States extending from Quebec to the Gulf ...

to

branches



branches

A division of a stem, or secondary stem arising from the main stem of a plant

Correct Concept

Legen



How to link IATE to BabelNet? (strong mapping)



Domain

Electronics and electrical engineering

en

Definition

a connected set of branches joining all the nodes of a network without forming a loop

Definition Ref.

IEV 131-2-9,1978,Electrical and magnetic circuits

Term

tree

Reliability

3 (Reliable)

Term Ref.

IEV 131-2-9,1978,Electrical and magnetic circuits

Date

24/09/2003



Electronics and electrical engineering [COM]

[Full entry](#)

EN tree

★★★★ →@

ES árbol

★★★★ →@

FR arbre

★★★★ →@

IT albero

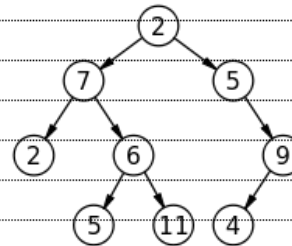
★★★★ →@

NL boom

★★★★ →@

PT árvore

★★★★ →@





How to link IATE to



Babelify

tree a connected set of branches joining all the nodes of a network without forming a loop

Enable partial matches:

ENGLISH

BABELFY!

Domain

Electronics and electrical engineering

en

Definition

Definition Ref.

a connected set of branches joining all the nodes of a network without forming a loop

IEV 131-2-9,1978,Electrical and magnetic circuits

Term

Reliability

Term Ref.

Date

tree

3 (Reliable)

IEV 131-2-9,1978,Electrical and magnetic circuits

24/09/2003

Electronics and electrical engineering [COM]

Full entry

EN tree

ES árbol

FR arbre

IT albero

NL boom

PT árvore

★★★★ →@

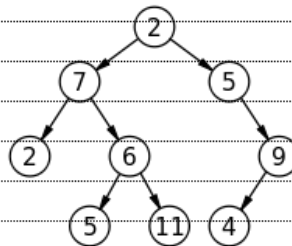
★★★★ →@

★★★★ →@

★★★★ →@

★★★★ →@

★★★★ →@





How to link IATE to



Babelify

tree a connected set of branches joining all the nodes of a network without forming a loop

Enable partial matches:

ENGLISH

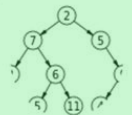
LOG IN REGISTER

BABELFY!

expanded view | compact view

tree

a connected set of branches joining all the nodes of a network without forming a loop



tree
In computer science, a tree is a widely used abstract data type or data structure...

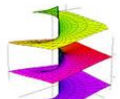


connected set
The state of being connected

connected
Joined or linked together



set
(mathematics) an abstract collection of numbers or symbols



branches
In the mathematical field of complex analysis, a branch point of a multi-valued...

joining
Make contact or come together



nodes
In communication networks, a node is either a connection point, a redistributio...



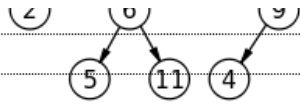
network
(computer science) a network of computers

forming
Create (as an entity)

loop
Loopback, or loopback, refers to the routing of electronic signals, digital data...

Legend: Named Entities • Cor

NL DOOM
PT árvore



★★★★ @
★★★★ @

Full entry





How to link IATE to



Babelify

Enable partial matches:

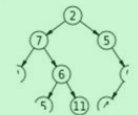
ENGLISH

BABELFY!

Correct Concept

expanded view | compact view

tree a connected set of branches joining all the nodes of a network without forming a loop



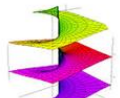
tree
In computer science, a tree is a widely used abstract data type or data structure...



connected set
The state of being connected
connected
Joined or linked together



set
(mathematics) an abstract collection of numbers or symbols



branches
In the mathematical field of complex analysis, a branch point of a multi-valued function is a point in the complex plane at which the function fails to be single-valued.

joining
Make contact or come together



nodes
In communication networks, a node is either a connection point, a redistribution point, or a terminal point.



network
(computer science) a network of computers

forming
Create (as an entity)

loop
Loopback, or loopback, refers to the routing of electronic signals, digital data...

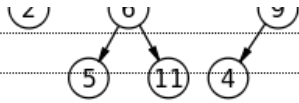
Full entry



Legend: Named Entities • Cor



NL DOOM
PT árvore



★★★★ @

★★★★ @



How to link IATE to BabelNet? (strong mapping)

IATE-49473
(tree)

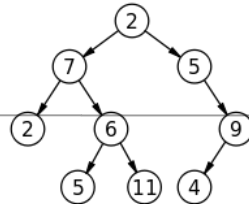


bn:00078131n
(tree)



BabelNet

IATE-1372703
(tree)



bn:02429580n
(tree)



Conclusion (on IATE)

- The structure of IATE is mostly based on lemmas and textual definitions (even though no definition is available in the dump)
- Early mapping approach for IATE-BabelNet:
 - **Strategy:** Mapping based on translations and synonyms overlap
 - **Issue:** overlap-based mapping is not enough for concepts with few translations and/or synonyms





Conclusion (on IATE)

- "Stronger" mapping approach IATE-BabelNet:
 - By exploiting **Babelfy** we can potentially improve mapping accuracy and coverage
 - **Strategy #1:** Disambiguate all synonyms and translations at once using Babelfy with its *language-agnostic setting*; then select the **predominant sense** for the lemma of interest;
 - **Strategy #2:** Disambiguate the target lemma together with its *definitions* in IATE; a richer context will then enable Babelfy to identify the correct synset associated with the target.






Conclusion (on IATE)

- A third possible mapping approach:
 - Disambiguate both *IATE* and *BabelNet* definitions associated with the target lemma; then compare the “**bag-of-synsets**” associated with each definition and select the *IATE concept-BabelNet synset* pair whose definition pair maximizes a predefined similarity measure.



Let us look again at the previous example with the term “**tree**”

Domain	ENVIRONMENT
Definition	1. Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.
Definition Ref.	1.CED;
Term	tree
Reliability	3 (Reliable)
Term Ref.	Institution: EEA; Title: GEMET - General Multilingual Environmental Thesaurus; Publication Year: 1999; Publication Month: August; Volume No: 5;
Date	23/03/1999




tree Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground

[LOG IN](#) [REGISTER](#)

Enable partial matches:


[expanded view](#) | [compact view](#)

tree Any large woody perennial plant with a distinct trunk giving rise to branches




tree
A tall perennial woody plant having a main trunk and branches, forming a distinct...

woody
Arthur Woody was born in Sachse, Georgia.




perennial plant
(botany) a plant lasting for three seasons or more

perennial
Lasting three seasons or more




plant
(botany) a living organism lacking the...


distinct
Constituting a separate entity or part



trunk
The main stem of a tree, usually covered with bark; the hole is usually the part that...



rise
A mountain range in the eastern United States extending from Quebec to the Gulf ...



branches
A division of a stem, or secondary stem arising from the main stem of a plant.

Domain	ENVIRONMENT
Definition	1. Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.
Definition Ref.	1.CED;
Term	tree
Reliability	3 (Reliable)
Term Ref.	Institution: EEA; Title: GEMET - General Multilingual Environmental Thesaurus; Publication Year: 1999; Publication Month: August; Volume No: 5;
Date	23/03/1999

BabelNet search results for 'tree'. The main definition is: "A tall perennial woody plant having a main trunk and branches forming a distinct elevated crown; includes both gymnosperms and angiosperms". Below this, there are related terms and definitions, such as "In botany, a tree is a perennial plant with an elongated stem, or trunk, supporting branches and leaves in most species."

Babelfy search results for 'tree'. The main definition is: "Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground". The interface highlights shared words in the definition: 'tree', 'Any large', 'woody', 'perennial plant', 'with a', 'distinct', 'trunk', 'giving', 'rise', 'to', 'branches'. Below the definition are cards for each highlighted word with their respective images and definitions.

Babelfy search results for 'botany'. The main definition is: "In botany, a tree is a perennial plant with an elongated stem, or trunk, supporting branches and leaves in most species". The interface highlights shared words in the definition: 'In botany', 'a', 'tree', 'is a', 'perennial plant', 'with an', 'elongated', 'stem', 'or', 'trunk', 'supporting', 'branches'. Below the definition are cards for each highlighted word with their respective images and definitions.

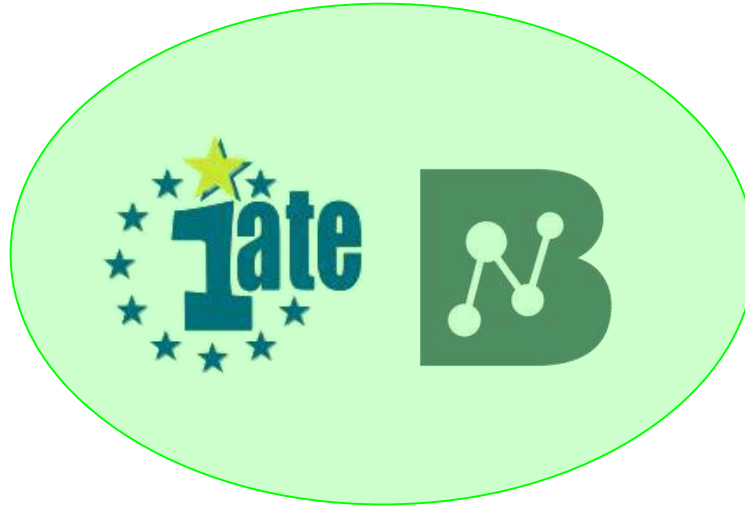
- **Higher similarity** between definitions = **larger number** of “shared” senses after disambiguation with Babelfy

Domain	ENVIRONMENT
Definition	1. Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.
Definition Ref.	1.CED;
Term	tree
Reliability	3 (Reliable)
Term Ref.	Institution: EEA; Title: GEMET - General Multilingual Environmental Thesaurus; Publication Year: 1999; Publication Month: August; Volume No: 5;
Date	23/03/1999

- **No** shared senses after disambiguation = **low (zero)** similarity between definitions



Conclusion





Advantages

- By integrating with BabelNet, IATE will greatly enlarge its scope and extend its multilingual dictionary from **24** to more than **250** languages.
- At the same time it will enrich BabelNet with additional domain-specific concepts



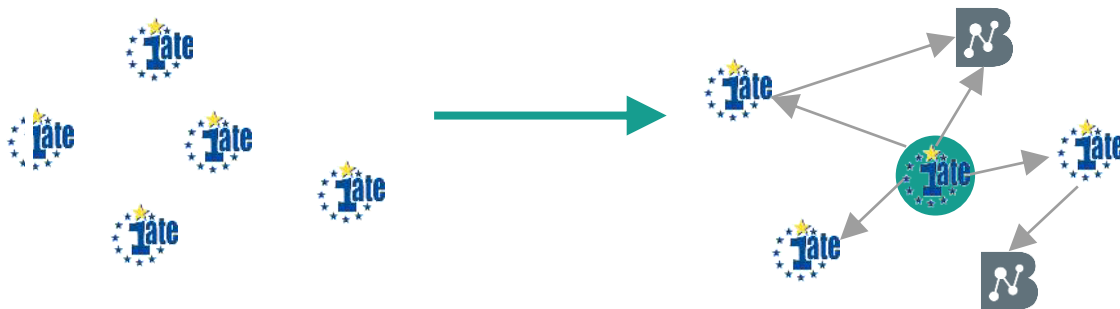


Advantages

Thanks to the IATE-BabelNet mapping, IATE will be able to directly exploit the BabelNet knowledge graph, and become a full-fledged **semantic network** itself.



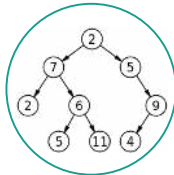
An interconnected network of concepts will enable new ways of exploring the resource, based on **semantic connections** across related concepts and entities





Advantages

- IATE will benefit from the vast amount of additional information encoded in BabelNet, such as **images**
- It will be possible to **identify duplicate and overlapping concepts**



en > en es fr it nl pl pt ro sk (domain: Any domain, type of search: All)

Result 1- 10 of 1003 for tree

ENVIRONMENT [CdT]

[Full entry](#)

EN tree	★★★★	+	@	
ES arboles	★★★★	+	@	
FR arbre	★★★★	+	@	
IT albero	★★★★	+	@	
NL boom	★★★★	+	@	
PT árvore	★★★★	+	@	
PT árvores	★★★★	+	@	

Electronics and electrical engineering [COM]

[Full entry](#)

EN tree	★★★★	+	@	
ES árbol	★★★★	+	@	
FR arbre	★★★★	+	@	
IT albero	★★★★	+	@	
NL boom	★★★★	+	@	
PT árvore	★★★★	+	@	





EuroVoc

EuroVoc

**MIND
THE LEXICAL
GAP**

EuroVoc

Building block
of the semantic web



EuroVoc

EuroVoc



- EuroVoc is a multilingual, multidisciplinary **thesaurus** covering the activities of the EU, the European Parliament in particular
- It contains terms in **23** EU languages (Bulgarian, Croatian, Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Italian, Latvian, Lithuanian, Maltese, Polish, Portuguese, Romanian, Slovak, Slovenian, Spanish and Swedish), plus Albanian, the language of the FYROM and Serbian
- EuroVoc is managed by the **Publications Office**, which moved forward to **ontology-based thesaurus management** and **semantic Web technologies** following W3C recommendations as well as latest trends in thesaurus standards

Languages	Preferred Terms	Non Preferred Terms (Synonym)	Definitions
BG	6 883	1 681	78
ES	6 883	8 904	229
CS	6 883	14 074	92
DA	6 883	7 594	229
DE	6 883	9 494	227
ET	6 883	7 116	93
EL	6 883	8 092	227
EN	6 883	8 348	233
FR	6 883	8 057	228
IT	6 883	10 592	228
..



EuroVoc

EuroVoc

- EuroVoc is already a **semantic network**
- EuroVoc is based on **domains** (21 overall)
- Each domain is further subdivided into **sub-domains** (127 overall)



EuroVoc

EuroVoc

- EuroVoc is already a **semantic network**;
- EuroVoc is based on **domains** (21 overall)
- Each domain is further subdivided into **sub-domains** (127 overall)

- POLITICS
- INTERNATIONAL RELATIONS
- EUROPEAN UNION
- LAW
- SCIENCE
- ...

- **political framework**
- **political party**
- **electoral procedure and voting**
- **parliament**
- **parliamentary proceedings**
- ...



EuroVoc

EuroVoc

- A EuroVoc entry contains:
 - **synonyms**
 - **translations**
 - **definitions** in multiple languages
 - **domains**
 - **sub-domains**
 - **relations**

ethnography	
SN The branch of anthropology that deals with the scientific description of individual human societies.	LANGUAGE EQUIVALENTS
36 SCIENCE	BG етнография
MT 3611 humanities	ES etnografia
BT1 ethnology	CS etnografie
BT2 social sciences	DA etnografi
RT ethnic group [2821]	DE Ethnografie
	ET etnograafia
	EL εθνογραφία
	EN ethnography
	FR ethnographie
	HR etnografija
	IT etnografia
	LV etnogrāfija
	LT etnografija
	HU etnográfia
	MT etnografija
	NL etnografie
	PL etnografia
	PT etnografia
	RO etnografie
	SK etnografia
	SL etnografija
	FI etnografia
	SV etnografi
	SR етнографија
	MK етнографија
	SQ etnografi



EuroVoc

EuroVoc

lemma

ethnography

SN
The branch of anthropology that deals with the scientific description of individual human societies.

36 SCIENCE
MT 3611 humanities
BT1 ethnology
BT2 social sciences

RT ethnic group [2821]

URI <http://eurovoc.europa.eu/6394>

Has Exact Match
Ethnography (ECLAS)

LANGUAGE EQUIVALENTS

BG	етнография
ES	etnografia
CS	etnografie
DA	etnografi
DE	Ethnografie
ET	etnograafia
EL	εθνογραφία
EN	ethnography
FR	ethnographie
HR	etnografija
IT	etnografia
LV	etnogrāfija
LT	etnografija
HU	etnográfia
MT	etnografija
NL	etnografie
PL	etnografia
PT	etnografia
RO	etnografie
SK	etnografia
SL	etnografija
FI	etnografia
SV	etnografi
SR	етнографија
MK	етнографија
SQ	etnografi

definition

domain/sub-domains

relations

translations

URI of the entry



Linking EuroVoc to BabelNet

- **Goal:** To automatically (and semantically) link EuroVoc to BabelNet using a **language- and resource-agnostic approach**



BabelNet

Linking EuroVoc to BabelNet





How to link EuroVoc to BabelNet? (strong mapping)

Again we can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**.



Lexicon-based approach

Definition-based approach



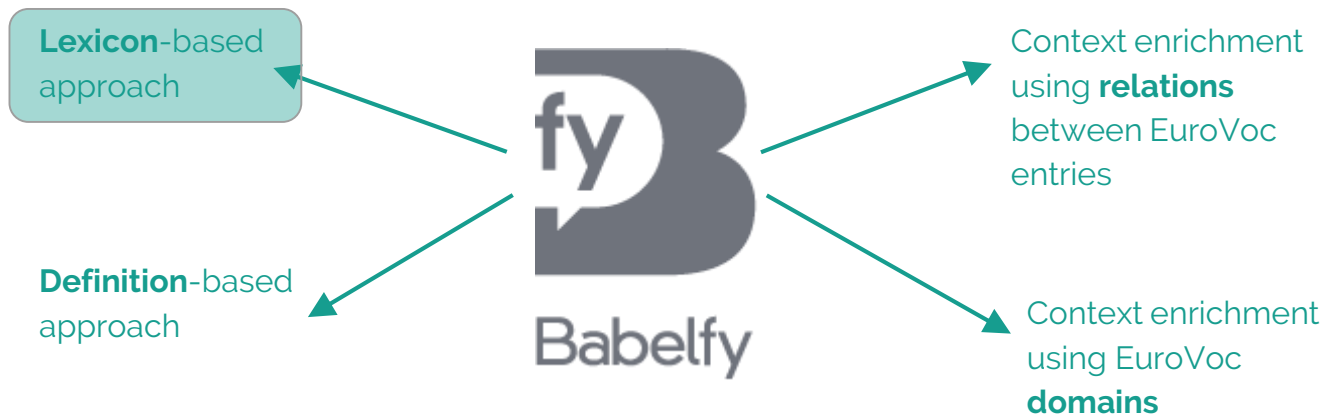
Context enrichment using **relations** between EuroVoc entries

Context enrichment using EuroVoc **domains**



How to link EuroVoc to BabelNet? (strong mapping)

Again we can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**.





How to link EuroVoc to BabelNet?

(strong mapping - 1)



Lexicon-based approach

Target word: **cement**



How to link EuroVoc to BabelNet?

(strong mapping - 1)



Lexicon-based approach

Target word: **cement**



cement

UF *cement industry*

68 INDUSTRY

MT 6831 building and public works

BT1 building materials

BT2 building industry

URI <http://eurovoc.europa.eu/5993>

Has Exact Match

Cement (AGROVOC)

Cement (ECLAS)

cement (GEMET)

cement (UNBIS)

Has Related Match

Cement industry (ECLAS)

cement industry (GEMET)

cement manufacture (GEMET)

cement industry (UNBIS)

LANGUAGE EQUIVALENTS

BG	ЦИМЕНТ
ES	cemento
CS	cement
DA	cement
DE	Zement
ET	tsement
EL	τσιμέντο
EN	cement
FR	ciment
HR	cement
IT	cemento
LV	cements
LT	cementas
HU	cement
MT	siment
NL	cement
PL	cement
PT	cimento
RO	ciment
SK	cement
SL	cement
FI	sementti
SV	cement
SR	цемент
MK	цемент
SQ	çimento



BabelNet


- Noun
- Verb


cement ENGLISH TRANSLATE INTO... SEARCH


15 results


Noun

15 results

- 

cement
Concrete pavement is sometimes referred to as cement
ID: 00017080n | Concept
- 

cement
A building material that is a powder made of a mixture of calcined limestone and clay; used with water and sand or gravel to make concrete and mortar
ID: 00017081n | Concept
- 

cement
Something that hardens to act as adhesive material
ID: 00017082n | Concept
- 

cement
Any of various materials used by dentists to fill cavities in teeth
ID: 00017083n | Concept

Target word: **cement**


Correct mapping to EuroVoc


LOG IN REGISTER

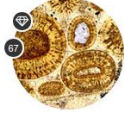
SEARCH


PREFERENCES


- Noun
- Verb


- 

cementum, cement
A specialized bony substance covering the root of a tooth
ID: 00017084n | Concept
- 

Chuck Mosley, Cement (band)
Charles Henry "Chuck" Mosley III is an American singer-songwriter.
ID: 02601203n | Named Entity
- 

Cementation (geology), Cement (geology)
Cementation involves ions carried in groundwater chemically precipitating to form new crystalline material between sedimentary grains.
ID: 00936848n | Concept
- 

Cement (novel)
Cement is a Russian novel by Fyodor Gladkov.
ID: 00757437n | Named Entity
- 

Cement (film)
Cement is a 2000 crime drama-thriller film directed by Adrian Pasdar and written by Justin Monjo.
ID: 02946594n | Named Entity
- 

Cement (song)
"Cement" was the second single from British rock band Feeder's critically

EuroVoc to

ing mapping - 1)



How to link EuroVoc to BabelNet? (strong mapping - 1)



How to link EuroVoc to BabelNet?

(strong mapping - 1)



cement	
UF	<i>cement industry</i>
68 INDUSTRY	
MT	6831 building and public works
BT1	building materials
	BT2 building industry
URI	http://eurovoc.europa.eu/5993
Has Exact Match	
	<i>Cement (AGROVOC)</i>
	<i>Cement (ECLAS)</i>
	<i>cement (GEMET)</i>
	<i>cement (UNBIS)</i>
Has Related Match	
	<i>Cement industry (ECLAS)</i>
	<i>cement industry (GEMET)</i>
	<i>cement manufacture (GEMET)</i>
	<i>cement industry (UNBIS)</i>
	LANGUAGE EQUIVALENTS
BG	ЦИМЕНТ
ES	cemento
CS	cement
DA	cement
DE	Zement
ET	tsement
EL	τσιμέντο
EN	cement
FR	ciment
HR	cement
IT	cemento
LV	cements
LT	cementas
HU	cement
MT	siment
NL	cement
PL	cement
PT	cimento
RO	ciment
SK	cement
SL	cement
FI	sementti
SV	cement
SR	ЦЕМЕНТ
MK	ЦЕМЕНТ
SQ	çimento



How to link EuroVoc to BabelNet?

(strong mapping - 1)



LANGUAGE EQUIVALENTS	
BG	цимент
ES	cemento
CS	cement
DA	cement
DE	Zement
ET	tsement
EL	τσιμέντο
EN	cement
FR	ciment
HR	cement
IT	cemento
LV	cements
LT	cementas
HU	cement
MT	siment
NL	cement
PL	cement
PT	cimento
RO	ciment
SK	cement
SL	cement
FI	sementti
SV	cement
SR	цемент
MK	цемент
SQ	çimento

Lexicon-based approach - **cement**



How to link EuroVoc to BabelNet?

(strong mapping - 1)



цемент, cemento, cement, cement, Zement, tsement, τσιμέντο, cement, ciment, cement, cemento, cements, cementas, cement, siment, cement, cement, cimento, ciment, cement, cement, sementti, cement, цемент, цемент, çimento

Enable partial matches:

AGNOSTIC

BABELFY!

PL	cement
PT	cimento
RO	ciment
SK	cement
SL	cement
FI	sementti
SV	cement
SR	цемент
MK	цемент
SQ	çimento



Babelify is an output of the MARCOE ERC Starting Grant No. 294204. Concept and application by Armin Maass and Roberto Navigli. Babelify and its API are licensed under a Creative Commons Attribution-NonCommercial-Share Alike 3.0 License. For any commercial use, please contact us.





ЦИМЕНТ, cemento, cement, cement, Zement, tsement, τσιμέντο, cement, ciment, cement, cemento, cements, cementas, cement, siment, cement, cement, cimeto, ciment, cement, cement, sementi, cement, цемент, цемент, çimento

Enable partial matches:

AGNOSTIC

BABELFY!

expanded view | compact view

ЦИМЕНТ

cemento

cement

cement

Zement

tsement

τσιμέντο

cement

ciment



ЦИМЕНТ

A building material that is a powder made of a mixture of calcined limestone...



cemento

A building material that is a powder made of a mixture of calcined limestone...



cement

A building material that is a powder made of a mixture of calcined limestone...



cement

A building material that is a powder made of a mixture of calcined limestone...



Zement

A building material that is a powder made of a mixture of calcined limestone...



tsement

A building material that is a powder made of a mixture of calcined limestone...



τσιμέντο

A building material that is a powder made of a mixture of calcined limestone...



cement

A building material that is a powder made of a mixture of calcined limestone...



ciment

A building material that is a powder made of a mixture of calcined limestone...

expanded view | compact view

cimento

ciment

cement

cement

sementti

cement

ЦЕМЕНТ

ЦЕМЕНТ

çimento



A building material that is a powder made of a mixture of calcined limestone



ciment

A building material that is a powder made of a mixture of calcined limestone



cement

A building material that is a powder made of a mixture of calcined limestone



cement

A building material that is a powder made of a mixture of calcined limestone



sementti

A building material that is a powder made of a mixture of calcined limestone



cement

A building material that is a powder made of a mixture of calcined limestone



ЦЕМЕНТ

A building material that is a powder made of a mixture of calcined limestone



ЦЕМЕНТ

A building material that is a powder made of a mixture of calcined limestone



çimento

A building material that is a powder made of a mixture of calcined limestone

PL
PT
RO
SK
SL
FI
SV
SR
MK
SQ



How to link EuroVoc to BabelNet?

(strong mapping - 1)

EuroVoc-5993
(cement)

bn:00017081n
(cement)

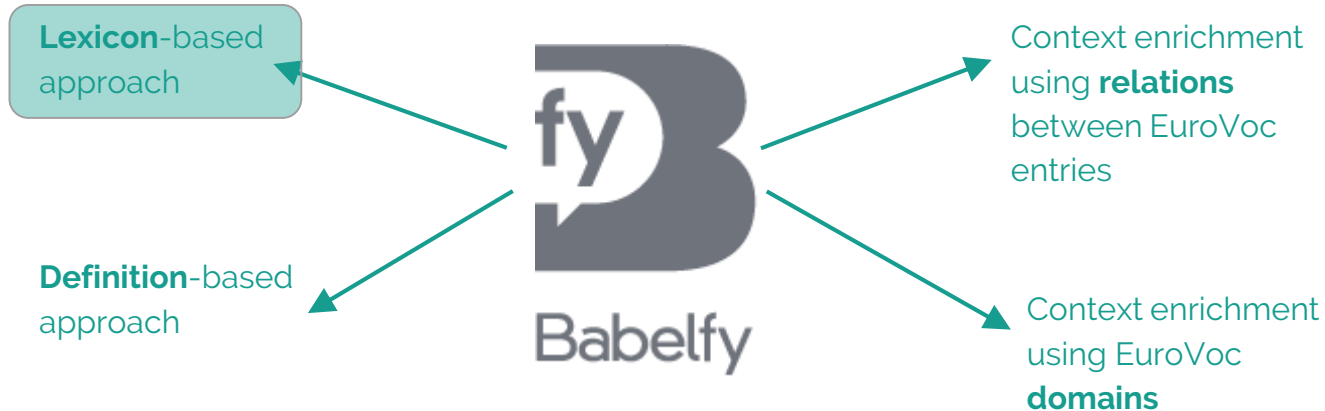


BabelNet



How to link EuroVoc to BabelNet? (strong mapping)

We can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**.





How to link EuroVoc to BabelNet? (strong mapping)

We can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**.



Lexicon-based approach

Definition-based approach

Same approach used for IATE



Context enrichment using **relations** between EuroVoc entries

Context enrichment using EuroVoc **domains**



How to link EuroVoc to BabelNet? (strong mapping)

We can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**.



Lexicon-based approach

Definition-based approach



Context enrichment using **relations** between EuroVoc entries

Context enrichment using EuroVoc **domains**



How to link EuroVoc to BabelNet?

(strong mapping - 3)



Context enrichment using **relations** between EuroVoc entries

Target word: **missile**



How to link EuroVoc to BabelNet?

Context enrichment
using **relations**
between EuroVoc
entries



Target word: **missile**



missile

UF *nuclear missile*

08 INTERNATIONAL RELATIONS

MT 0821 defence
BT1 military equipment
NT1 anti-missile defence
NT1 ballistic missile
NT1 guided missile
NT1 intercontinental missile

RT Euro-missile [0816]
nuclear technology [6621]

URI <http://eurovoc.europa.eu/1944>

Has Exact Match

Missiles (ECLAS)

LANGUAGE EQUIVALENTS

BG	ракета
ES	misil
CS	raketa
DA	missil
DE	Rakete
ET	rakett
EL	πύραυλοι
EN	missile
FR	missile
HR	projektil
IT	missile
LV	raķete
LT	raketa
HU	rakéta
MT	missila
NL	raket
PL	broń rakietowa
PT	missil
RO	rachetă
SK	raketa
SL	izstrelak
FI	ohjus
SV	robot
SR	ракета
MK	проектил
SQ	raketë



Target word: **missile**



Correct mapping to EuroVoc





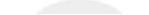
missile

ENGLISH TRANSLATE INTO... SEARCH

PREFERENCES

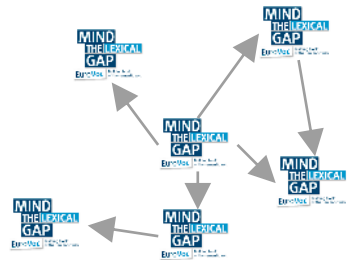
All Concepts Named Entities 5 results

Noun 5 results

-  **missile**
A rocket carrying a warhead of conventional or nuclear explosives; may be ballistic or directed by remote control
ID: 00055322n | Concept
-  **projectile, missile**
A weapon that is forcibly thrown or projected at a targets but is not self-propelled
ID: 00055323n | Concept
-  **Missile (Ghost Trick)**
Missile is a fictional character and a major character of the Nintendo DS video game Ghost Trick: Phantom Detective.
ID: 02432795n | Named Entity
-  **Missile (song)**
"Missile" is a song by IAMX from the album Kiss + Swallow.
ID: 01703991n | Named Entity
-  **Missile (film)**



How to link EuroVoc to BabelNet? (strong mapping - 3)



EuroVoc Graph

+



How to link EuroVoc to BabelNet?

(strong mapping - 3)



missile

UF *nuclear missile*

08 INTERNATIONAL RELATIONS

MT 0821 defence

BT1 military equipment

NT1 anti-missile defence

NT1 ballistic missile

NT1 guided missile

NT1 intercontinental missile

RT Euro-missile [0816]
nuclear technology [6621]

URI <http://eurovoc.europa.eu/1944>

Has Exact Match

Missiles (ECLAS)

Euro-missile RDF/XML

UF *Eurostrategic weapon*
INF
intermediate nuclear force

08 INTERNATIONAL RELATIONS

MT 0816 international balance

BT1 international security

RT missile [0821]

URI <http://eurovoc.europa.eu/3505>

Has Related Match

intermediate range nuclear forces (UNBIS)

LANGUAGE EQUIVALENTS

BG	Европакета
ES	euromisil
CS	eurorakety
DA	euromissil
DE	Eurorakete
ET	eurorakett
EL	ευρωπαϊκοί πύραυλοι
EN	Euro-missile
FR	euromissile
HR	euroraketa
IT	euromissile
LV	Eiropas darbības rādīša raķete
LT	euroraketa
HU	euromissila
MT	Ewromissila
NL	euroraket
PL	eurorakieta
PT	euromísseis
RO	eurorachete
SK	eurorakety
SL	evroraketa
FI	euro-ohjus
SV	euromissil
SR	евро-пакета
MK	европакета
SQ	Euro-raketë



How to link EuroVoc to BabelNet? (strong mapping - 3)



missile

UF *nuclear missile*

08 INTERNATIONAL RELATIONS

MT 0821 defence

BT1 military equipment

NT1 anti-missile defence

NT1 ballistic missile

NT1 guided missile

NT1 intercontinental missile

RT Euro-missile [0816]
nuclear technology [6621]

URI <http://eurovoc.europa.eu/1944>

Has Exact Match
Missiles (ECLAS)

Euro-missile

UF *Eurostrategic weapon*
INF
intermediate nuclear force

08 INTERNATIONAL RELATIONS

MT 0816 international balance

BT1 international security

RT missile [0821]

URI <http://eurovoc.europa.eu/3194>

Has Related Match
intermediate range nuclear force

nuclear technology

UF *particle accelerators*

66 ENERGY

MT 6621 electrical and nuclear industries

BT1 nuclear industry

NT1 fuel enrichment

NT1 fuel reprocessing

NT1 nuclear chemistry

NT1 nuclear fission

NT1 nuclear fusion

NT1 nuclear test

NT1 reactor cooling system

RT CERN [7611]
dual-use good [6411]
missile [0821]
nuclear law [6606]
nuclear physics [3606]
nuclear war [0816]
nuclear weapon [0821]
therapeutics [2841]

URI <http://eurovoc.europa.eu/4422>

Has Exact Match
nuclear technology (UNBIS)

Has Related Match
Particle accelerators (ECLAS)

LANGUAGE EQUIVALENTS

BG	ядерна технология
ES	tecnología nuclear
CS	jaderná technologie
DA	atomteknologi
DE	Kerntechnologie
ET	tuumatehnoloogia
EL	πυρηνική τεχνολογία
EN	nuclear technology
FR	technologie nucléaire
HR	nuklearna tehnologija
IT	tecnologia nucleare
LV	kodoltehnoloģija
LT	branduolinė technologija
HU	nukleáris technológia
MT	teknoloġija nukleari
NL	nucleaire technologie
PL	technika jądrowa
PT	tecnologia nuclear
RO	tehnologie nucleare
SK	jadrová technológia
SL	jedrska tehnologija
FI	ydinteknologia
SV	kärnteknologi
SR	нуклеарна технологија
MK	нуклеарна технологија
SQ	teknologji bërthamore

RDF/XML

How to link EuroVoc to BabelNet? (strong mapping - 3)

MIND THE LEXICAL GAP
EuroVoc building block of the semantic web

missile

UF *nuclear missile*

08 INTERNATIONAL RELATIONS

MT 0821 defence

BT1 military equipment

NT1 anti-missile defence

NT1 ballistic missile

NT1 guided missile

NT1 intercontinental missile

RT Euro-missile [0816]
nuclear technology [6621]

URI <http://eurovoc.europa.eu/1944>

Has Exact Match
Missiles (ECLAS)

Euro-missile

UF *Eurostrategic weapon*

INF *intermediate nuclear force*

08 INTERNATIONAL RELATIONS

MT 0816 international balance

BT1 international security

RT missile [0821]

URI <http://eurovoc.europa.eu/3194>

Has Related Match
intermediate range nuclear force

nuclear technology

UF *particle accelerators*

66 ENERGY

MT 6621 electrical and nuclear industries

BT1 nuclear industry

NT1 fuel enrichment

NT1 fuel reprocessing

NT1 nuclear chemistry

NT1 nuclear fission

NT1 nuclear fusion

NT1 nuclear test

NT1 reactor cooling system

RT CERN [7611]
dual-use good [6411]
missile [0821]
nuclear law [6606]
nuclear physics [3606]
nuclear war [0816]
nuclear weapon [0821]
therapeutics [2841]

URI <http://eurovoc.europa.eu/4422>

Has Exact Match
nuclear technology (UNBIS)

Has Related Match
Particle accelerators (ECLAS)



Babelfy

RDF/XML

LANGUAGE EQUIVALENTS

- BG ядрена технология
- ES tecnología nuclear
- CS jaderná technologie
- DA atomteknologi
- DE Kerntechnologie
- ET tuumatehnoloogia
- EL πυρηνική τεχνολογία
- EN nuclear technology**
- FR technologie nucléaire
- HR nuklearna tehnologija
- IT tecnologia nucleare
- LV kodoltehnoloģija
- LT branduolinė technologija
- HU nukleáris technológia
- MT teknoloġija nukleari
- NL nucleaire technologie
- PL technika jądrowa
- PT tecnologia nuclear
- RO tehnologie nucleare
- SK jadrová technológia
- SL jedrska tehnologija
- FI ydintechnologia
- SV kärnteknologi
- SR нуклеарна технологија
- MK нуклеарна технологија
- SQ teknologji bërthamore

How to link EuroVoc to BabelNet?

(strong mapping - 3)



The screenshot shows the Babelfy search interface. The search bar contains the text "missile Euro-missile nuclear technology". Below the search bar, there is a checkbox for "Enable partial matches:" which is checked. To the right of the search bar, there is a language dropdown menu set to "ENGLISH" and a teal button labeled "BABELFY!".

nuclear technology [6621]

URI <http://eurovoc.europa.eu/1944>

Has Exact Match

Missiles (ECLAS)



missile [6621]

- nuclear law [6606]
- nuclear physics [3606]
- nuclear war [0816]
- nuclear weapon [0821]
- therapeutics [2841]

URI <http://eurovoc.europa.eu/4422>

Has Exact Match

nuclear technology (UNBIS)

Has Related Match

Particle accelerators (ECLAS)

MT	teknologija nukleari
NL	nucleaire technologie
PL	technika jądrowa
PT	tecnologia nuclear
RO	tehnologie nucleare
SK	jadrová technológia
SL	jedrska tehnologija
FI	ydinteknologia
SV	kärnteknologi
SR	нуклеарна технологија
MK	нуклеарна технологија
SQ	teknologji bërthamore



Babelfy

missile Euro-missile nuclear technology

Enable partial matches:

ENGLISH

BABELFY!

[expanded view](#) | [compact view](#)

missile

Euro-missile

nuclear technology



missile

A rocket carrying a warhead of conventional or nuclear explosives:



nuclear technology

Nuclear technology is technology that involves the reactions of atomic nuclei.

EuroVoc Graph



How to link EuroVoc to BabelNet?

(strong mapping - 3)

EuroVoc-0821
(missile)

bn:00055322n
(missile)



BabelNet



How to link EuroVoc to BabelNet? (strong mapping)

We can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**.



Lexicon-based approach

Definition-based approach



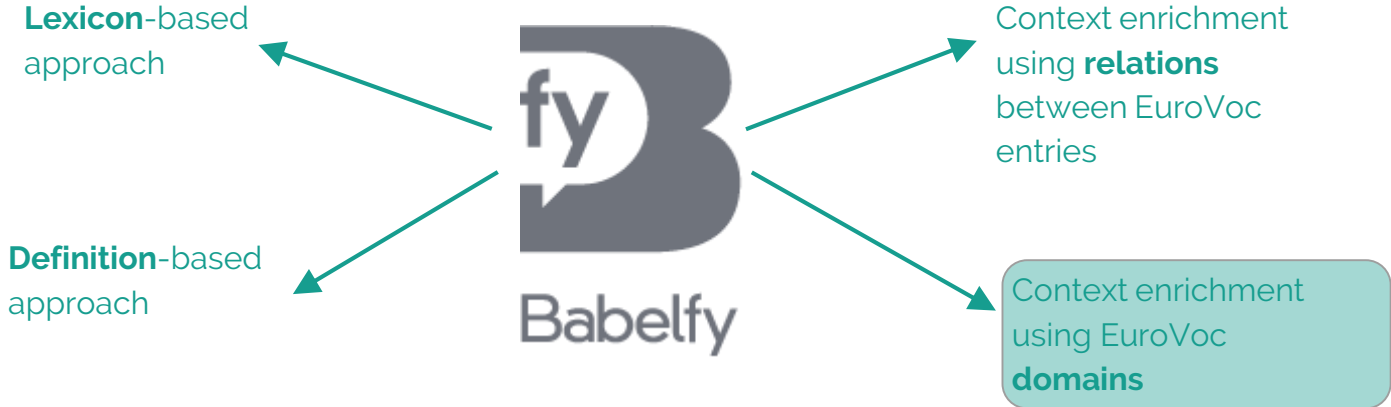
Context enrichment using **relations** between EuroVoc entries

Context enrichment using EuroVoc **domains**



How to link EuroVoc to BabelNet? (strong mapping)

We can leverage **Babelfy**, our joint graph-based approach to multilingual **Entity Linking** and **Word Sense Disambiguation**.





How to link EuroVoc to BabelNet?

(strong mapping - 4)

Context enrichment using
EuroVoc **domains**



Target word: **Eureka**



How to link EuroVoc to Ba



Context enrichment
using EuroVoc
domains

Target word: **Eureka**



Eureka		LANGUAGE EQUIVALENTS
UF	<i>Eureka charter Eureka ministerial conference Eureka programme Eureka project European Research Coordination Agency</i>	BG Eypeka ES Eureka CS program Eureka DA Eureka DE Eureka ET Eureka EL Eureka EN Eureka FR Eureka HR Eureka IT Eureka LV Eureka LT Eureka HU Eureka MT Eureka NL Eureka PL Eureka PT Eureka RO Eureka SK Eureka SL Eureka FI Eureka SV Eureka SR Eypeka MK Eypeka SQ Eureka
64 PRODUCTION, TECHNOLOGY AND RESEARCH		
MT	6416 research and intellectual property	
BT1	research policy	
URI	http://eurovoc.europa.eu/3654	

Target word: **Eureka**

A screenshot of the BabelNet search interface. At the top left is the BabelNet logo and a small European Union flag. The search bar contains the word 'eureka'. To the right of the search bar are options for 'ENGLISH' and 'TRANSLATE INTO...'. A 'SEARCH' button is on the far right. Below the search bar, there are filter tabs for 'All', 'Concepts', and 'Named Entities', along with various icons representing different types of entities. A '36 results' indicator is shown on the right. The main content area is titled 'Noun' and lists four search results, each with a circular image icon, a title, a description, and an ID. The results are: 1. 'constantan, Eureka' (ID: 00022037n) with an image of a wire; 2. 'Eureka' (ID: 00031885n) with an image of a building; 3. 'Wikipedia, Wikipedia article, WP, Eureka (iPhone application)' (ID: 03288118n) with an image of a globe; 4. 'Eureka, Eureka, California' (ID: 00193239n) with an image of a coastal town.

BabelNet

LOG IN REGISTER

eureka

ENGLISH TRANSLATE INTO...

SEARCH

PREFERENCE

All Concepts Named Entities

36 results

Noun

36 results

constantan, Eureka

An alloy of copper and nickel with high electrical resistance and a low temperature coefficient; used as resistance wire

ID: 00022037n | Concept

Eureka

A town in northwest California on an arm of the Pacific Ocean

ID: 00031885n | Named Entity

Wikipedia, Wikipedia article, WP, Eureka (iPhone application)

Wikipedia is a free-access, free content Internet encyclopedia, supported and hosted by the non-profit Wikimedia Foundation.

ID: 03288118n | Named Entity

Eureka, Eureka, California

Eureka is the principal city and county seat of Humboldt County in the Redwood Empire region of California.

ID: 00193239n | Named Entity

Target word: **Eureka**

Correct mapping to EuroVoc

BabelNet

eureka

ENGLISH TRANSLATE INTO... SEARCH

PREFERENCE

All Concepts Named Entities 36 results

Noun

36 results

Noun

Eureka (U.S. TV series), The Artifact
Eureka is an American science fiction television series that premiered on Syfy on July 18, 2006.
ID: 02840394e | Named Entity

Eureka (organization)
EUREKA, often abbreviated as EI
ID: 14978752e | Named Entity

Eureka, Eureka, Missouri
Eureka is a city located in St. Louis County, Missouri, United States, between St. Louis and Pacific, Missouri, along Interstate 44.
ID: 03886694e | Named Entity

Eureka (1983 film)
Eureka is a 1983 film, directed by Nicolas Roeg.
ID: 02239953e | Named Entity

Eureka (2000 film)
Eureka is a 2000 Japanese drama film directed and written by Shinji Aoyama.
ID: 01619832e | Named Entity

Eureka, Eureka, Illinois
Eureka is a city in Olio Township, Woodford County, Illinois, United States.
ID: 01619832e | Named Entity



How to link EuroVoc to BabelNet? (strong mapping - 4)

- Disambiguating **Eureka** with no context:



Babelfy





EuroVoc

How to link EuroVoc to

MIND
THE LEXICAL
GAP

EuroVoc building block
of the semantic web

The screenshot shows the Babelify search interface. At the top left is the Babelify logo. A search bar contains the text 'eureka'. Below the search bar, there is a checkbox for 'Enable partial matches' which is checked. To the right of the search bar is a language dropdown menu set to 'ENGLISH' and a teal 'BABELFY!' button. Below the search bar, there are links for 'expanded view' and 'compact view'. The search results area shows a yellow highlight on the word 'eureka' above a result card. The card features a circular image of a white building with a blue roof, the word 'eureka' in teal, and the text 'A town in northwest California on an arm of the Pacific Ocean'.

A town in northwest California on an arm of the Pacific Ocean

How to link EuroVoc to

The screenshot shows the Babelify search interface. At the top left is the Babelify logo. A search bar contains the text 'eureka'. Below the search bar, there is a checkbox for 'Enable partial matches' which is checked. To the right of the search bar is a language dropdown menu set to 'ENGLISH' and a green 'BABELFY!' button. Below the search bar, there are links for 'expanded view' and 'compact view'. The search results area shows a single result for 'eureka' with a yellow highlight. The result card features a circular image of a building, the word 'eureka' in teal, and the description: 'A town in northwest California on an arm of the Pacific Ocean'. A large, bold, red 'Wrong!' stamp is overlaid on the right side of the result card.

A town in northwest California on an arm of the Pacific Ocean



How to link EuroVoc to BabelNet? (strong mapping - 4)



EuroVoc Domains

+



Babelfy



Eureka

UF *Eureka charter*
Eureka ministerial conference
Eureka programme
Eureka project
European Research Coordination Agency

64 PRODUCTION, TECHNOLOGY AND RESEARCH

MT 6416 research and intellectual property
BT1 research policy

URI <http://eurovoc.europa.eu/3654>

LANGUAGE EQUIVALENTS

BG	Eypeka
ES	Eureka
CS	program Eureka
DA	Eureka
DE	Eureka
ET	Eureka
EL	Eureka
EN	Eureka
FR	Eureka
HR	Eureka
IT	Eureka
LV	Eureka
LT	Eureka
HU	Eureka
MT	Eureka
NL	Eureka
PL	Eureka
PT	Eureka
RO	Eureka
SK	Eureka
SL	Eureka
FI	Eureka
SV	Eureka
SR	Eypeka
MK	Eypeka
SQ	Eureka



Eureka

UF *Eureka charter*
Eureka ministerial conference
Eureka programme
Eureka project
European Research Coordination Agency

64 PRODUCTION, TECHNOLOGY AND RESEARCH

MT 6416 research and intellectual property
BT1 research policy

LANGUAGE EQUIVALENTS

BG Eypeka
ES Eureka
CS program Eureka
DA Eureka
DE Eureka
ET Eureka
EL Eureka
EN Eureka
FR Eureka
HU Eureka

eureka, PRODUCTION, TECHNOLOGY AND RESEARCH, research and intellectual property, research policy

Enable partial matches:

ENGLISH

BABELFY!

MIND
THE LEXICAL



Babelfy



Babelfy

LOG IN REGISTER

eureka, PRODUCTION, TECHNOLOGY AND RESEARCH, research and intellectual property, research policy

Enable partial matches:

ENGLISH

BABELFY!

expanded view | compact view

eureka

PRODUCTION

TECHNOLOGY AND RESEARCH

research

and

intellectual property

research policy



eureka
EUREKA, often abbreviated as E!

PRODUCTION

(economics)
manufacturing or mining or growing something (usually i...

Agency for
Science, Tec
and Resea

TECHNOLOGY
AND
RESEARCH

The Agency for
Science, Technology
and Research is a
statutory board und...



TECHNOLOGY
An engineering



research

Systematic
investigation to
establish facts



intellectual
property

Intangible property
that is the result of
creativity (such as
patents or trademar...

intellectual

Of or associated with
or requiring the use of
the mind



ity of Suss
e Policy

research policy

Science and
Technology Policy
Research is an
academic center at...



research

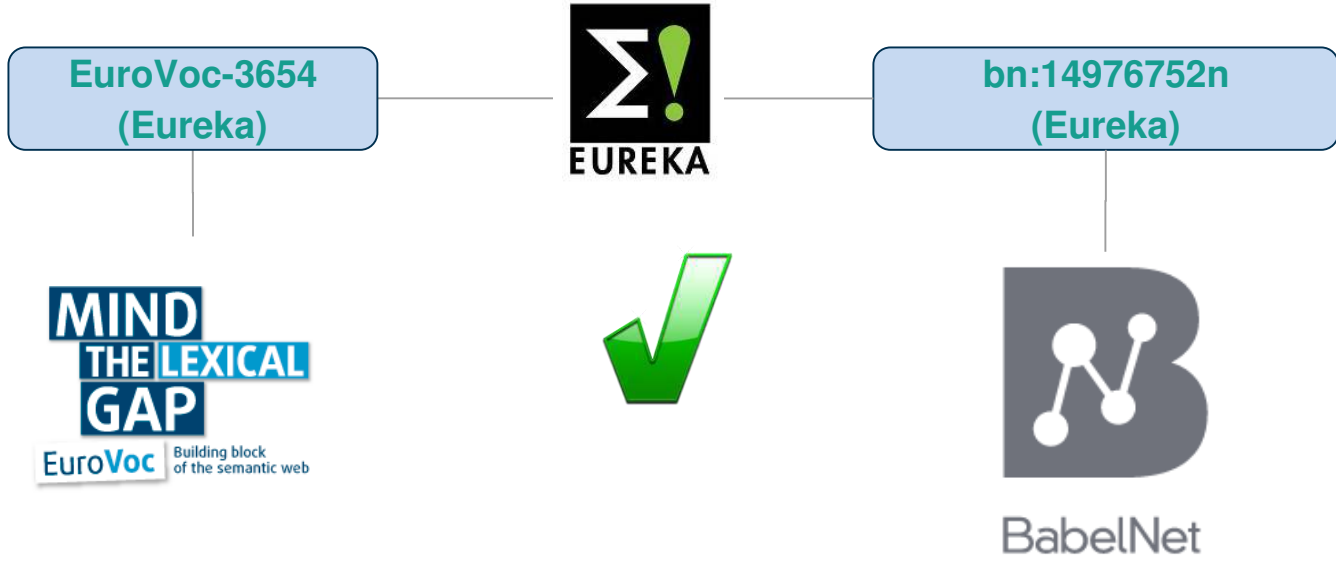
Systematic
investigation to
establish facts

Name



How to link EuroVoc to BabelNet?

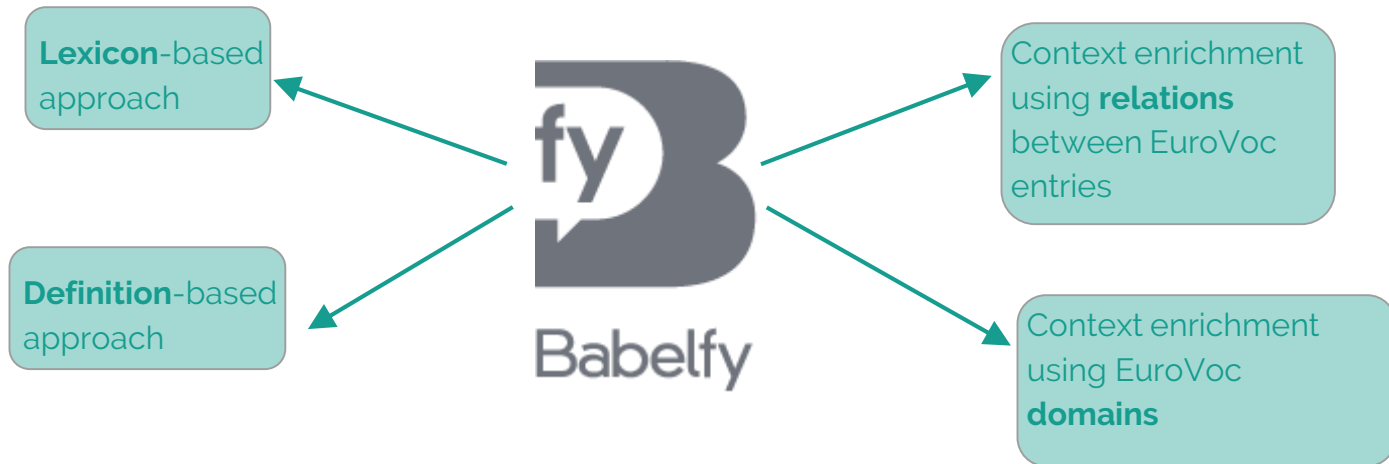
(strong mapping - 4)





How to link EuroVoc to BabelNet? (strong mapping)

A more advanced mapping approach could leverage **all these basic strategies** at the same time to improve accuracy





EuroVoc

Conclusion (on EuroVoc)

- Various basic approaches for the BabelNet-EuroVoc mapping:
 - **Lexicon-based approach**
 - Exploits lemmas and translations of a EuroVoc entry
 - **Definition-based approach**
 - Exploits the textual definition as useful context for disambiguation
 - **Context enrichment using relations**
 - Exploits relations between EuroVoc entries as context
 - **Context enrichment using domains**
 - Exploits EuroVoc domains and subdomains
- More advanced techniques: semantic similarities based on vector-space models, etc.



EuroVoc

Advantages

By integrating with BabelNet, EuroVoc (like IATE) will greatly enlarge its scope and extend its multilingual dictionary to more than **250** languages.





EuroVoc

Advantages

- EuroVoc is already a **semantic network**, but its scope is relatively limited: by integrating with BabelNet, many more connections will be introduced, enlarging EuroVoc's scope and dimension
- New content (e.g. **images**) associated with EuroVoc entries

missile
UF <i>nuclear missile</i>
08 INTERNATIONAL RELATIONS
MT 0821 defence
BT1 military equipment
NT1 anti-missile defence
NT1 ballistic missile
NT1 guided missile
NT1 intercontinental missile
RT Euro-missile [0816]
nuclear technology [6621]

2 relations



949 semantic relations

missile

A rocket ca
ballistic or c

ID: 00055322



Euramis

Euramis


Euramis

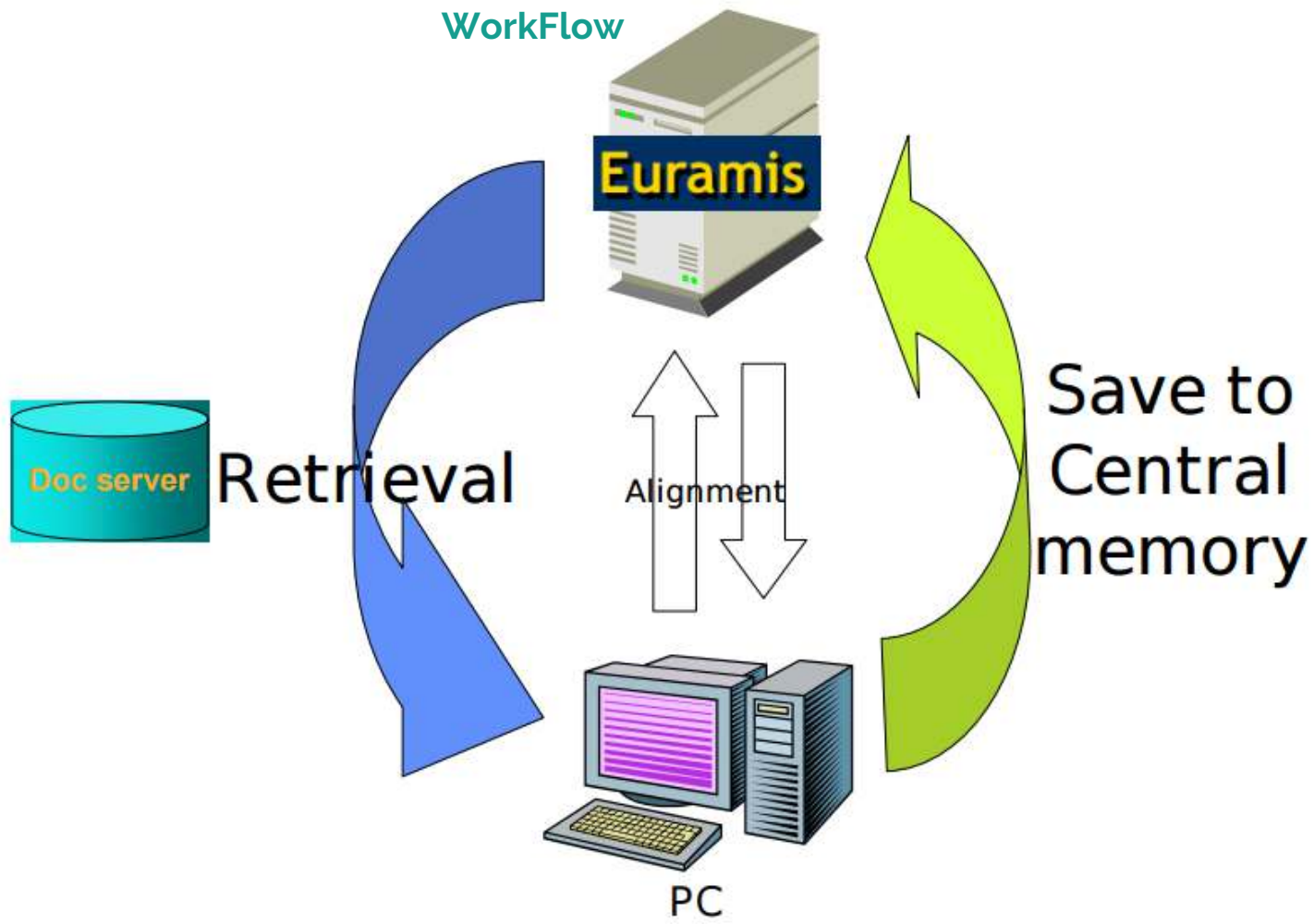
European **A**dvanced **M**ultilingual Information **S**ystem



Euramis

Euramis

- Euramis is a system of **databases** or **memories** (and associated tools) fed by the various institutions jointly (Legis-Process) or individually.
 - It acts as a multilingual, multidirectional repository of clearly labelled **equivalent phrases** ("segments") belonging to official EU documents allowing their re-use in translation in all European Institutions.
 - The system also contains a set of **interfaces** to manage access rights for sentence and document management, based on the user's login identification, for both Commission staff and other institution's staff.
- 



Alignment

Source sentence: English	Translation sentence: Italian
THE COMMISSION OF THE EUROPEAN COMMUNITIES,	LA COMMISSIONE DELLE COMUNITÀ EUROPEE,
Having regard to the Treaty establishing the European Community,	visto il trattato che istituisce la Comunità europea,
Having regard to Regulation No 79/65/EEC of the Council of 15 June 1965 setting up a network for the collection of accountancy data on the incomes and business operation of agricultural holdings in the European Economic Community, and in particular Article 7(3) thereof,	visto il regolamento n. 79/65/CEE del Consiglio, del 15 giugno 1965, relativo all'istituzione di una rete d'informazione contabile agricola sui redditi e sull'economia delle aziende agricole nella CEE, in particolare l'articolo 7, paragrafo 3,
Whereas:	considerando quando segue:
Commission Regulation (EEC) No 2237/77 lays down the contents of the farm return to be used.	Il regolamento (CEE) n. 2237/77 della Commissione stabilisce il contenuto della scheda aziendale da utilizzare.

6/516

< >

<< >>

Merge

Split

Delete

Undo

Redo

Close


Doc.: 640980000; RS: AGRI; Year: 2004; Creation ID: ALIGNI; Commission: 6/516 NUM



Euramis

Euramis

- **ENGLISH:** These imports competed with each other and with the like product manufactured by the Community industry.
 - **SPANISH:** Estas importaciones compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad.
-

- **ENGLISH:** The Commission, therefore, has excluded this company from the definition of the 'the Community industry` for the purpose of its injury determination.
 - **SPANISH:** La Comisión, por lo tanto, ha excluido a esta empresa de la definición de la industria de la Comunidad a efectos de la determinación del perjuicio.
- 

Euramis

Euramis

- **Keyword search** is currently used to browse the Euramis content:



...the expected results, owing to the dumped **imports**.

These **imports** competed with each other and with the like product manufactured by the Community industry.

The volume of dumped **imports** into the Community of the product concerned originating...

Euramis

Semantic search with Euramis

- **Keyword search** is currently used to browse the Euramis content:



- We can use **BabelNet synsets** in place of plain keywords!

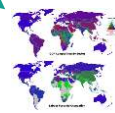
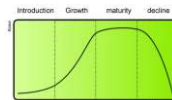
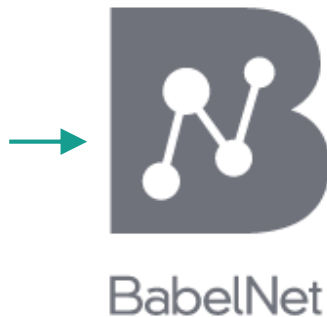
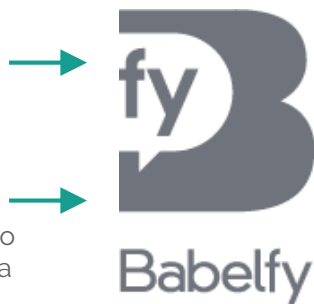
Euramis

Euramis

- What can we do with Euramis?
 - Being a repository of parallel text, Euramis does **not** associate each sentence with a particular lemma = no strict mapping
Euramis-BabelNet is possible at the sentence level
 - **But:** we can still exploit **Babelfy** to **index** Euramis sentences with the sense inventory of **BabelNet**

- **ENGLISH:** These imports competed with each other and with the like product manufactured by the Community industry.

- **SPANISH:** Estas importaciones compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad.



Euramis

Euramis

- **ENGLISH:** These imports competed with each other and with the like product manufactured by the Community industry.

- **SPANISH:** Estas importaciones compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad.



LOG IN REGISTER

Enable partial matches:

ENGLISH

BABELFY!



LOG IN REGISTER

Enable partial matches:

SPANISH

BABELFY!



ABOUT
PUBLICATIONS
DOWNLOADS
API GUIDE

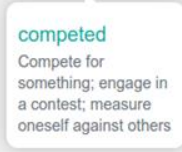
Babelfy is an output of the [MultiJEDI ERC Starting Grant](#) No. 259234. Concept and application by [Andrea Moro](#) and [Roberto Navigli](#). Babelfy and its API are licensed under a [Creative Commons Attribution-Non Commercial-Share Alike 3.0 License](#). For any commercial use, please [contact us](#).



These imports competed with each other and with the like product manufactured by the Community industry .



imports
Commodities (goods or services) bought from a foreign country



competed
Compete for something; engage in a contest; measure oneself against others



like
Resembling or similar; having the same or some of the same characteristics; ofte...



product
Commodities offered for sale



manufactured
Put together out of artificial or natural components or parts; He manufactured a...



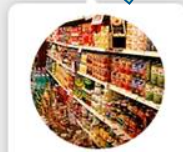
Community
A group of people living in a particular local area



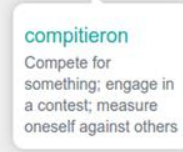
industry
The organized action of making of goods and services for sale

expanded view | compact view

Estas importaciones compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad .



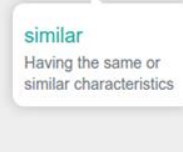
importaciones
Commodities (goods or services) bought from a foreign country



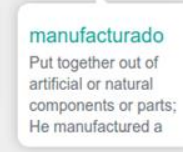
compitieron
Compete for something; engage in a contest; measure oneself against others



producto
Commodities offered for sale



similar
Having the same or similar characteristics



manufacturado
Put together out of artificial or natural components or parts; He manufactured a...



industria
The organized action of making of goods and services for sale



Comunidad
A group of people living in a particular local area

Euramis

Euramis

- **ENGLISH:** These imports competed with each other and with the like product manufactured by the Community industry.
- **SPANISH:** Estas importaciones compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad.

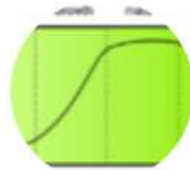


importaciones

Commodities (goods or services) bought from a foreign country

compitieron

Compete for something; engage in a contest; measure oneself against others

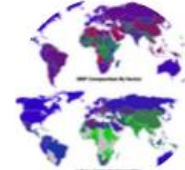


producto

Commodities offered for sale

manufacturado

Put together out of artificial or natural components or parts; He manufactured a



industria

The organized action of making of goods and services for sale




Comunidad

A group of people living in a particular local area



Euramis

Euramis

- **ENGLISH:** The Commission, therefore, has excluded this company from the definition of the 'the Community industry` for the purpose of its injury determination.
 - **SPANISH:** La Comisión, por lo tanto, ha excluido a esta empresa de la definición de la industria de la Comunidad a efectos de la determinación del perjuicio.
- 

Euramis

Euramis

- **ENGLISH:** The Commission, therefore, has excluded this company from the definition of the 'the Community industry' for the purpose of its injury determination.
- **SPANISH:** La Comisión, por lo tanto, ha excluido a esta empresa de la definición de la industria de la Comunidad a efectos de la determinación del perjuicio.



LOG IN REGISTER

Enable partial matches:

ENGLISH

BABELFY!



LOG IN REGISTER

Enable partial matches:

SPANISH

BABELFY!



ABOUT
PUBLICATIONS
DOWNLOADS
API GUIDE

Babelfy is an output of the [MultiJEDI ERC Starting Grant](#) No. 259234. Concept and application by [Andrea Moro](#) and [Roberto Navigli](#). Babelfy and its API are licensed under a [Creative Commons Attribution-Non Commercial-Share Alike 3.0 License](#). For any commercial use, please [contact us](#).



The **Commission**, therefore, has **excluded** this **company** from the **definition** of the 'the **Community** **industry**

Commission

A fee for services rendered based on a percentage of an amount received or...

excluded

Prevent from entering; shut out



company

An institution created to conduct business



definition

A concise explanation of the meaning of a word or phrase or symbol



Community

A group of people living in a particular local area

industry

The people or companies engaged in a particular kind of commercial enterprise

expanded view | compact view

La **Comisión**, por lo tanto, ha **excluido** a esta **empresa** de la **definición** de la **industria** de la **Comunidad** a

Comisión

A fee for services rendered based on a percentage of an amount received or...

excluido

Prevent from entering; shut out



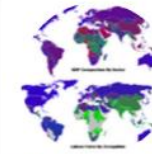
empresa

An institution created to conduct business



definición

A concise explanation of the meaning of a word or phrase or symbol



industria

The organized action of making of goods and services for sale



Comunidad

A group of people living in a particular local area

Euramis

Euramis

- **ENGLISH:** The Commission, therefore, has excluded this company from the definition of the 'the Community industry' for the purpose of its injury determination.
- **SPANISH:** La Comisión, por lo tanto, ha excluido a esta empresa de la definición de la industria de la Comunidad a efectos de la determinación del perjuicio.

Comisión

A fee for services rendered based on a percentage of an amount received or...

excluido

Prevent from entering; shut out



empresa

An institution created to conduct business



definición

A concise explanation of the meaning of a word or phrase or symbol



Comunidad

A group of people living in a particular local area

- **Euramis** is neither a glossary nor a thesaurus: as such, a strict mapping from Euramis entries to BabelNet synsets is inherently impossible
- Instead of mapping, we can however **disambiguate** each sentence
- Thanks to the Euramis alignments and the multilingual nature of BabelNet, we can then identify the most frequent **Euramis concepts across languages**;
- We can **index** each sentence with the corresponding concepts identified through disambiguation, enabling concept-based browsing and search of the Euramis resource.

BabelNet as Semantic Glue!

- As a result of all mapping and indexing procedures we just saw, the three examined resources (IATE, EuroVoc and Euramis) can eventually **connected to each other** through BabelNet!



en	
Definition	goods or services purchased from another country
<i>Definition Ref.</i>	'imports'. A Dictionary of Business and Management (5 ed.). Edited by Jonathan Law. Oxford University Press. Current Online Version: 2014, www.oxfordreference.com [2.10.2014]
Term	imports
<i>Reliability</i>	3 (Reliable)
<i>Term Ref.</i>	Implementing Regulation (EU) No 1039/2014 establishing the standard import values for determining the entry price of certain fruit and vegetables, eur-lex.europa.eu/leg...
<i>Date</i>	02/10/2014
Term	importations
<i>Reliability</i>	2 (Minimum reliability)
<i>Term Ref.</i>	Implementing Regulation (EU) No 1001/2013 amending Annex I to Regulation (EEC) No 2658/87 on the tariff and statistical nomenclature and on the Common Customs Tariff, 32013R1001:EN:NOT >32013R1001/EN
<i>Date</i>	02/10/2014

it	
Definition	merci, servizi o capitali provenienti dall'estero e immessi nel territorio di uno Stato
<i>Definition Ref.</i>	COM-IT sulla base di: Enciclopedia Treccani.it, Importazione, www.treccani.it/encic... [31.10.2014]
Term	importazioni



import		EQUIVALENTI IN ALTRE LINGUE	
20 TRADE		BG	вход
MT	2016 trade	ES	importación
BT1	trading operation	CS	dovoz
NT1	import (EU) [4.4]	DA	import
NT1	re-import	DE	Einfuhr
RT	countervailing charge [2011]	ET	import
	customs valuation [2011]	EL	εισαγωγές
	free circulation [2011]	EN	import
	import monopoly [4031]	FR	importation
	import tax [2446]	HR	uvoz
URI	http://eurovoc.europa.eu/1309	IT	importazione
Has Exact Match		LV	imports
	<i>Imports (ECLAS)</i>	LT	importas
	<i>import (GEMET)</i>	HU	behozatal
		MT	importazzjoni
		NL	invoer
		PL	import
		PT	importação
		RO	import
		SK	dovoz
		SL	uvoz
		FI	tuonti
		SV	import
		SR	yboz
		MK	yboz
		SQ	importim



Euramis

- These **imports** competed with each other and with the like product manufactured by the Community industry.
- Estas **importaciones** compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad.

BabelNet as Source

en	
Definition	goods or services purchased from another country
Definition Ref.	"imports". A Dictionary of Business and Management (5 ed.). Edited by Jonathan Law. Oxford University Press. Current Online Version: 2014. www.oxfordreference.com . [2.10.2014]
Term	imports
Reliability	3 (Reliable)
Term Ref.	Implementing Regulation (EU) No 1039/2014 establishing the standard import values for determining the entry price of certain fruit and vegetables, eur-lex.europa.eu/leg...
Date	02/10/2014
Term	importations
Reliability	2 (Minimum reliability)
Term Ref.	Implementing Regulation (EU) No 1001/2013 amending Annex I to Regulation (EEC) No 2658/87 on the tariff and statistical nomenclature and on the Common Customs Tariff, 32013R1001-EN-NOT >32013R1001/EN
Date	02/10/2014
it	
Definition	merci, servizi o capitali provenienti dall'estero e immessi nel territorio di uno Stato
Definition Ref.	COM-IT sulla base di: Enciclopedia Treccani.it, Importazione, www.treccani.it/encic... [31.10.2014]
Term	importazioni

import	
20 TRADE	
MT	2016 trade
BT1	trading operation
NT1	import (EU) [4.4]
NT1	re-import
RT	countervailing charge [2011]
	customs valuation [2011]
	free circulation [2011]
	import monopoly [4031]
	import tax [2446]
URI http://eurovoc.europa.eu/1309	
Has Exact Match	
	Imports (ECLAS)
	import (GEMET)
EQUIVALENTI IN ALTRE LINGUE	
BG	внос
ES	importación
CS	dovoz
DA	import
DE	Einfuhr
ET	import
EL	εισαγωγές
EN	import
FR	importation
HR	uvoz
IT	importazione
LV	imports
LT	importas
HU	behozatal
MT	importazzjoni
NL	invoer
PL	import
PT	importação
RO	import
SK	dovoz
SL	uvoz
FI	tuonti
SV	import
SR	ybo3
MK	ybo3
SQ	importim



BabelNet

Euramis

- These **imports** competed with each other and with the like product manufactured by the Community industry.
- Estas **importaciones** compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad

BabelNet as Source

Definition	goods or services purchased from another country
Definition Ref.	"imports". A Dictionary of Business and Management (5 ed.). Edited by Jonathan Law. Oxford University Press. Current Online Version: 2014. www.oxfordreference.com . [2.10.2014]
Term	imports
Reliability	3 (Reliable)
Term Ref.	Implementing Regulation (EU) No 1039/2014 establishing the standard import values for determining the entry price of certain fruit and vegetables, eur-lex.europa.eu/leg...
Date	02/10/2014
Term	importations
Reliability	2 (Minimum reliability)
Term Ref.	Implementing Regulation (EU) No 1001/2013 amending Annex I to Regulation (EEC) No 2658/87 on the tariff and statistical nomenclature and on the Common Customs Tariff, 32013R1001-EN-NOT >32013R1001/EN
Date	02/10/2014

it

Definition	merci, servizi o capitali provenienti dall'estero e immessi nel territorio di uno Stato
Definition Ref.	COM-IT sulla base di: Enciclopedia Treccani.it, Importazione, www.treccani.it/encic... [31.10.2014]
Term	importazioni

import	
20 TRADE	
MT	2016 trade
BT1	trading operation
NT1	import (EU) [4.4]
NT1	re-import
RT	countervailing charge [2011]
	customs valuation [2011]
	free circulation [2011]
	import monopoly [4031]
	import tax [2446]
URI	http://eurovoc.europa.eu/1309
Has Exact Match	
	Imports (ECLAS)
	import (GEMET)
EQUIVALENTI IN ALTRE LINGUE	
BG	внос
ES	importación
CS	dovoz
DA	import
DE	Einfuhr
ET	import
EL	εισαγωγές
EN	import
FR	importation
HR	uvoz
IT	importazione
LV	imports
LT	importas
HU	behozatal
MT	importazzjoni
NL	invoer
PL	import
PT	importação
RO	import
SK	dovoz
SL	uvoz
FI	tuonti
SV	import
SR	ybo3
MK	ybo3
SQ	importim



Euramis

- These **imports** competed with each other and with the like product manufactured by the Community industry.
- Estas **importaciones** compitieron entre sí y con el producto similar manufacturado por la industria de la Comunidad

Immediate applications

- Empowering **translation systems** with an increasingly higher degree of multilingual connections
- Direct bridge towards **extra-European languages** (Middle East, China, etc.) through translations and cross-language links
- Great improvement for terminology extraction, thanks to **parallel example sentences** provided by Euramis
- Multilingual support for the development of EU websites and online platforms, through a comprehensive, **cross-lingual up-to-date lexicon**




Immediate applications



- **Automatic updates** from all the main lexical resources across the web, hence reduced management costs;
- Powerful tool in the hands of **EU mediators**;
 - *Citizens have the right to write to any Community institution or body in one of the languages of the Member States and to receive a response in the same language (Article 24 TFEU, paragraph 4)*
- The overall perspective is to integrate through BabelNet many lexical resources, both European and extra-European, using advanced and reliable automatic mapping systems



The Road Ahead

- Obviously it is not just pushing a button and mapping
 1. The **mapping quality** can be improved by
 - calibrating the disambiguation algorithm
 - integrating semantic vector disambiguation techniques
 - and much more
 2. **Updating** and **syncing** is an issue to be taken into account
 - We are doing it with **BabelNet live!**
- 

×

Add a search term



REFINE YOUR SEARCH

MEDIA

 Image (44) Text (1) Only items with links to media

CAN I USE IT?

 Only With Permission (29)

45 results

Planche 12 : Esquisse d'après 'La Madone du Magnificat' de Sandro Botticelli Album de 59 planches. Etudes d'après des maîtres anciens exécutées à Munich et en Italie | Sandro Botticelli

painting (image-making)

[View at KIK-IRPA, Brussels \(Belgium\)](#)  [Image](#)



Babelfy

Planche 12 : Esquisse d'après 'La Madonne du Magnificat' de Sandro Botticelli Album de 59 planches. Etudes d'après des maîtres anciens exécutées à Munich et en Italie | Sandro Botticelli

Enable partial matches:

FRENCH

BABELFY!

[expanded view](#) | [compact view](#)

Planche

12 :

Esquisse

d'après 'La

Madonne

du

Magnificat

' de

Sandro Botticelli



Planche

A stout length of sawn timber; made in a wide variety of sizes



Esquisse

Preliminary drawing for later elaboration



Madonne

La Vierge à l'Enfant, ou Madone, est un thème récurrent en



Magnificat

(Luke) the canticle of the Virgin Mary (from Luke 1:46 beginning



Sandro Botticelli

Italian painter of mythological and religious paintings



Babelfy

LOG IN REGISTER

Angyal a töviskoronával | Giovanni Lorenzo Bernini, Giovanni Lorenzo Bernini, Gian Lorenzo Bernini, Gian Lorenzo Bernini, Giovanni Lorenzo Bernini, Lorenzo Bernini, Gian Lorenzo Bernini, Gianlorenzo Bernini, Gian Lorenzo Bernini, Gian Lorenzo Bernini, Gian Lorenzo Bernini, Gian Lorenzo Bernini, Gian Lorenzo Bernini, Gian Lorenzo Bernini, Giovanni Lorenzo Bernini, Le Bernin, Gian Lorenzo Bernini, Gian Lorenzo Bernini, Gian Lorenzo Bernini, and Gian Lorenzo Bernini

Enable partial matches:

AGNOSTIC

BABELFY!

expanded view | compact view

Angyal

a töviskoronával |

Giovanni Lorenzo Bernini, Giovanni Lorenzo Bernini

, Gian Lorenzo Bernini



Angyal

Spiritual being

attendant upon God



Bernini, Giovanni Lorenzo

Italian sculptor and



Gian Lorenzo Bernini

Italian sculptor and

We use cookies to enhance your browsing experience. By using our services, you agree to our use of cookies.